

Appl. No. 09/931,342
Amdt. dated August 19, 2004
Reply to Office Action of May 19, 2004

Amendments to the Claims:

The following listing of the claims replaces all prior versions, and listings, of the claims in this application.

Listing of Claims:

1. (Currently amended) A method for removing pathogens from biological liquids, said biological liquids containing at least one pharmaceutically active molecule, said method comprising the steps of:

providing a biological liquid, whereby pathogens are potentially present, in an apparatus comprising an anode and a cathode and a membrane-based separation means suitable for separating said pathogens from said pharmaceutically active molecule in a liquid, said separation means being positioned between said anode and said cathode, ~~and substantially all transmembrane migration of the pathogen or pharmaceutically active molecule is initiated by application of current;~~

applying current between said anode and said cathode, thereby causing one of said pathogens or said pharmaceutically active molecules to pass said separation means, wherein substantially all transmembrane migration of the pathogen or pharmaceutically active molecule is initiated by application of current;

~~optionally, periodically stopping and reversing said current; and~~
removing and recovering said pharmaceutically active molecule in a liquid form being essentially free of pathogens.

2. (Previously presented) The method according to claim 1 whereby said separation means is a filtration means.

Appl. No. 09/931,342
Amdt. dated August 19, 2004
Reply to Office Action of May 19, 2004

3. (Previously presented) The method according to claim 2 whereby said filtration means is an ultrafiltration membrane.

4. (Previously presented) The method according to claim 2 whereby said filtration means is a nanofiltration membrane.

5. (Previously presented) The method according to claim 1 whereby said pharmaceutically active molecule is a protein.

6. (Previously presented) The method according to claim 5 whereby said protein is a blood protein.

7. (Previously presented) The method according to claim 5 whereby said protein is smaller than said pathogen and said separation means allows passing of said protein but prevents passing of said pathogen.

8. (Currently amended) The method according to claim 1 whereby said separation means is a series of membrane filters with different separation characteristics.

9. (Previously presented) The method according to claim 8 whereby said different filtration characteristics are caused by different cut-off values of the filters in said series of filters.

Appl. No. 09/931,342
Amdt. dated August 19, 2004
Reply to Office Action of May 19, 2004

10. (Previously presented) The method according to claim 1 whereby said pathogens are selected from the group consisting of viruses, bacteria, prions, and combinations thereof.

11. (Previously presented) The method according to claim 9 whereby said cut-off values are selected to allow a separation between said pharmaceutically active molecule and aggregate of said molecule.

12. (Currently amended) An apparatus for removing pathogens from biological fluids, said biological fluids containing at least one pharmaceutically active molecule, said apparatus comprising:

a container for uptake of said biological liquid,

an anode, a cathode, and a membrane-based separation means suitable for separating said pathogens from said pharmaceutically active molecule, said separation means being positioned between said anode and said cathode, ~~and substantially all transmembrane migration of the pathogen or pharmaceutically active molecule is initiated by application of current;~~

means for removing either a pathogen or a pharmaceutically active molecule having passed through the separation means in liquid form; and

a current supply and means for applying said current between said anode and said cathode, wherein substantially all transmembrane migration of the pathogen or pharmaceutically active molecule is initiated by application of current.

13. (Currently amended) A method for removing pathogens from biological liquids, comprising:

Appl. No. 09/931,342
Amdt. dated August 19, 2004
Reply to Office Action of May 19, 2004

providing a biological liquid, whereby pathogens are potentially present, in an apparatus comprising an anode and a cathode and a membrane-based separation means suitable for separating pathogens from a pharmaceutically active molecule, the separation means being positioned between the anode and the cathode;

applying current between the anode and cathode, thereby causing one of the pathogens or the pharmaceutically active molecules to pass through the separation means, the separation means containing a selective membrane that allows passage of either a pathogen or a pharmaceutically active molecule through the membrane, while preventing the other from entering therethrough, wherein substantially all transmembrane migration of the pathogen or pharmaceutically active molecule is initiated by application of current;

optionally, periodically stopping and reversing the current; and

removing and recovering the pharmaceutically active molecule in a liquid form being essentially free of pathogens.

14. (Previously presented) The method according to claim 13 whereby the separation means is a filtration means.
15. (Previously presented) The method according to claim 14 whereby the filtration means is an ultrafiltration membrane.
16. (Previously presented) The method according to claim 14 whereby the filtration means is a nanofiltration membrane.

Appl. No. 09/931,342
Amdt. dated August 19, 2004
Reply to Office Action of May 19, 2004

17. (Previously presented) The method according to claim 14 whereby the pharmaceutically active molecule is a protein.
18. (Previously presented) The method according to claim 17 whereby the protein is a blood protein.
19. (Previously presented) The method according to claim 17 whereby the protein is smaller than the pathogen and the separation means allows passing of the protein but prevents passing of the pathogen.
20. (Currently amended) The method according to claim 13 whereby the separation means is a series of membrane filters with different separation characteristics.
21. (Previously presented) The method according to claim 20 whereby the different filtration characteristics are caused by different cut-off values of the filters in the series of filters.
22. (Previously presented) The method according to claim 13 whereby the pathogens are selected from the group consisting of viruses, bacteria, prions, and combinations thereof.
23. (Previously presented) The method according to claim 21 whereby the cut-off values are selected to allow a separation between the pharmaceutically active molecule and aggregate of the molecule.

Appl. No. 09/931,342
Amdt. dated August 19, 2004
Reply to Office Action of May 19, 2004

24. (Currently amended) An apparatus for removing pathogens from biological fluids, the biological fluids containing at least one pharmaceutically active molecule, the apparatus comprising:
a container for uptake of the biological liquid,
an anode, a cathode, and a membrane-based separation means suitable for separating the pathogen from the pharmaceutically active molecule, the separation means containing a selective membrane that allows passage of either a pathogen or a pharmaceutically active molecule through the membrane, while preventing the other from entering therethrough, and being positioned between the anode and the cathode;
means for removing either a pathogen or a pharmaceutically active molecule having passed through the membrane in liquid form; and
a current supply and means for applying current between the anode and the cathode, wherein substantially all transmembrane migration of the pathogen or pharmaceutically active molecule is initiated by application of current.